

REMARKS

By the above amendment, Claims 32, 33, and 35 are cancelled without prejudice or disclaimer, Claims 1, 5-8, 10, 16, 21, 23, 25, 26, 28, 30, 31, 34, 36, 38, 47, 49, and 69 are amended, new generic Claim 70 has been added, and Claims 50-68 remain withdrawn. The non-withdrawn claims now in the case are 1, 4-28, 30, 31, 34, 36-49, 69, and 70. In light of the foregoing amendments and ensuing remarks, favorable action is respectfully requested.

Claims 1, 4-28, 30-49, and 69 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Haeberli et. al., U.S. 4,228,297, in view of Grant et. al. (Chemical Dictionary, 1990, pages 11-12).

To begin with, we wish to correct Applicants' position relative to catalyst usage in the Haeberli reference. After a careful reading of the Haeberli reference in its entirety, it is clear that the Haeberli disclosure is ambiguous as regards catalyst usage in that process. Thus, with reference to Haeberli:

- A) The Abstract states "... a second catalyst which is different from the first catalyst."
- B) At column 5, lines 15-18, it is stated in effect that the second reaction is carried out in the presence of a second alkaline catalyst "which may be different from the first catalyst."
- C) At column 8, lines 55-57, reference is made to addition of from 0 to 30 mole percent, preferably from 1 to 5 mole percent "of a second alkaline catalyst, different from the first alkaline catalyst."
- D) In Example 1, potassium t-butoxide was used in the first step reaction and in the second step, lithium hydroxide monohydrate was used (column 10, lines 34 and 44, respectively).
- E) At column 10, lines 64-68, reference is made to using sodium methoxide or potassium methoxide instead of the potassium t-butoxide of Example 1 as the first catalyst, and lithium hydroxide monohydrate as the second catalyst.
- F) Example 2 used the same procedure as in Example 1, with an exception not involving the catalyst, and thus the disclosure is to the effect that the same catalyst system was used as in Example 1.

- G) Example 3 used the same procedure as in Example 1, with exceptions not involving the catalyst, and thus the disclosure is to the effect that the same catalyst system was used as in Example 1.
- H) In Example 4, sodium methoxide was used in the first step reaction and in the second step, ground lithium amide was used as the second catalyst (column 11, lines 48-49, and 58, respectively).
- I) Example 5 used the same procedure as in Example 4, with exceptions not involving the catalyst, and thus the disclosure is to the effect that the same catalyst system was used as in Example 4.
- J) Example 6 used the same procedure as in Example 3, except that instead of potassium t-butoxide in the first step reaction, sodium methoxide was used and instead of using lithium hydroxide monohydrate in the second stage reaction, lithium amide was used.
- K) Example 7 used the same procedure as in Example 3, with exceptions not involving the catalyst. Thus, the catalyst used in the first step was potassium t-butoxide and lithium hydroxide monohydrate was used in the second step.
- L) In Claim 1, at column 13, lines 37-38, “from 0 to 10 mole percent of a second alkaline catalyst which is different from the first catalyst” is specified.
- M) In Claim 2, at column 14, lines 23-25, “from 0 to 10 mole percent of a second alkaline catalyst which is different from the first catalyst” is specified.
- N) In Claim 3, at column 15, lines 55-57, “from 0 to 10 mole percent of a second alkaline catalyst which is different from the first catalyst” is specified.
- O) In Claim 4, at column 16, lines 37-38, “from 0 to 10 mole percent of a second alkaline catalyst which is different from the first catalyst” is specified.
- P) Claims 5-19 depend from Claims 1, 2, 3, and/or 4, and thus pursuant to 35 U.S.C. 112, “a claim in dependent form shall be construed to incorporate by reference all limitations of the claim to which it refers.” Therefore, Claims 5-19 specify “from 0 to 10 mole percent of a second alkaline catalyst which is different from the first catalyst”, which are the limitations set forth in Claims 1-4.

Accordingly, despite the ambiguity present in the text of the reference, it appears clear that the intent and thrust of the Haeberli reference is to the effect that different catalysts should be used.

We are not unmindful of the text of the first paragraph of column 9 stating that the second alkaline catalyst may be selected from the classes of compounds listed above for the first alkaline catalyst. However, in the context of the patent, the foregoing teaching does not at all make it clear that the second selected catalyst can be the same as the first catalyst. Rather, the second catalyst may be selected from the same class of compounds. Furthermore, this teaching at the top of column 9 shortly follows the teaching in column 8 at lines 56-57, which clearly refers to “a second alkaline catalyst, different from the first alkaline catalyst”. It is submitted therefore, that in the absence of the present disclosure, a fair reading of the ambiguous disclosure of the Haeberli reference is to the effect that the catalysts used should be different from each other.

Entirely apart from the question of whether the Haeberli catalyst in the two reaction stages can be the same or different from each other, there is the undeniable fact that there is no suggestion in either reference of using a phosphoric acid in order to effect a clean separation of the catalyst from the reaction product mixture. A chemical dictionary has been used in order to suggest that it would be obvious to select phosphoric acid instead of the glacial acetic acid used by Haeberli. It appears that the Grant et. al. Chemical Dictionary lists at least about one hundred different acids and there is nothing in the dictionary to suggest that the performance of phosphoric acid would be much better than acetic acid in effecting the desired separation of catalyst residues. Simply because things are well known does not make it obvious to use them. In fact, if on reading Haeberli one of ordinary skill in the art would seek to use another acid, they would be likely to use an acid such as hydrochloric acid which is well known in the prior art for use in such “catalyst neutralization” as indicated by U.S. Pat. Nos. 3,247,240; 3,330,859; 3,364,250 and 4,659,863, cited by Applicants in paragraphs [00020], [00022], [00021], and [00019], respectively, of their specification.

A careful reading of Applicants specification will show that Applicants have already demonstrated the superiority of phosphoric acid catalyst as compared to acetic acid as a catalyst in the present processes. Thus, in paragraph [000174] of Applicants' specification, a product mixture was treated with glacial acetic acid in order to neutralize the potassium catalyst. As reported in the specification, the result of this treatment was as follows:

The mixture turned to yellow and became cloudy. After adding 10.3 g of water, the mixture was then heated to 123°C and the pressure was reduced to 20 mm Hg to strip off the water, THF, and unreacted acetic acid. The resulting mixture was hazy, but solid precipitations were not observed, indicating that the potassium acetate was not precipitated out as easily as the potassium phosphate salts.

[Emphasis added]

In the following paragraph of Applicants' specification, it is shown that after additional workup it was possible to obtain the desired product. Thus, although acetic acid was found to be workable, Applicants' specification makes clear that phosphoric acid is more effective in removing the alkali metal catalyst residues. Neither Haeberli nor the Grant et. al. dictionary provides even a hint that such a superiority would exist for phosphoric acids as compared to acetic acid.

There are further patentable distinctions present in the various claims in the case. However, since the above arguments are believed to effectively traverse the rejection, it is felt that it is unnecessary at this time to further burden the record with additional arguments relative to the individual claims. We reserve the right, however, to utilize such additional arguments if it should become necessary in a later stage of the prosecution.

For the record, the reliance in the Action on the passage in column 10, lines 29-62 is noted. However, it should be kept in mind that one of the advantages of the presently-claimed invention is that liquid end products can be readily formed and recovered by precipitating out the catalyst residues from the liquid reaction mixture. In contrast, and as shown by the passage in column 10, lines 29-62 of Haeberli, it was necessary for the product to be recovered by crystallization from the liquid filtrate. Thus, the Haeberli process, while workable, does not possess the advantages of the presently-claimed process where the alkali metal catalyst residues can be precipitated from even a reaction mass containing a liquid end product whereby the liquid end product is readily recovered. Thus, it is submitted that the teachings of Haeberli do not render obvious the presently-claimed invention having the various advantages referred to above.

On the basis of the foregoing comments, it is submitted that the rejection should be reconsidered and withdrawn as it is untenable and inapplicable to the present claims.

The amendments to the claims are believed to have adequate support in the specification and/or in the original claims. For example, new Claim 70 is a generic claim corresponding generally to original Claims 1 and 5 and including use of phosphorous acid, as set forth in original Claim 16. The formulas in Claim 23 have been clarified, since in the original Formula I, m was 1 since Z was alkyl. Thus, the brackets and m are unnecessary in the formula. Also, the hydroxyl group in both Formula I and Formula II has been revised so that the bond goes to the oxygen atom rather than to the hydrogen atom. The amendment of Claim 26 specifying that Z is butyl, isooctyl, or 2-ethylhexyl is based on the Examples wherein products having these groups in the ester functionality are shown. Similarly, Claim 28, which specifies 2,6-di-tert-butylphenol; n-butyl alcohol; isooctyl alcohol; or 2-ethylhexyl alcohol; and potassium hydroxide as reaction components is also based on the Examples. The other modifications in the claims are believed to be readily apparent and/or self evident.

It is believed that the application should now be in condition for allowance. Accordingly, notice to this effect would be appreciated. If however, any matters remain requiring further consideration, the Examiner is requested to telephone the undersigned so that such matters can be discussed, and if possible, promptly resolved. Otherwise, it is requested that further correspondence in this Application be addressed to Jeremy J. Kliebert at the Albemarle Corporation address of record.

Respectfully Submitted,

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